Research Methods II - HW3

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1 Balance Table

	Control	Treatment	Difference
Academic quality	0.515	0.466	0.049
Athletic quality	0.424	0.551	-0.127**
Near big market	0.360	0.700	-0.340***

Table 1: Balance table for treatment (ranked) vs. control (non-ranked)

Clearly, the balance test has failed. Although there is no statistically significant difference in academic quality for treatment vs. control, there are statistically significant differences in both athletic quality (-0.127, $p < 0.05$) and being located near a major metropolitan area (-0.340, $p < 0.01$).

2 Question 3

Ideally, we would want to be able to use all variables that influence the selection of ranked vs. unranked universities (i.e., those factors that influence selection of "Top Basketball Program" by the relevant ranking committee). It is almost certain that there exist such "unobserved" variables that we do not currently have in our data set. For instance, the NCAA division of the program, or the number of players that are eventually recruited by an NBA team, may be among the selection criteria for which we currently lack data (although it is theoretically possible to obtain). Similarly, we may very well be using data that is irrelevant to the ranking selection criteria. It seems highly unlikely, for instance, that the academic quality of the university should play a role in determining whether the university has a top basketball program (as indicated by the lack of difference between treatment and control).

3 Propensity score model V1

	Ranked in 2017
Academic quality	-.18
	(.16)
Athletic quality	.41**
	(.16)
Near big market	.36***
	(.093)
Observations	100
R^2	0.182

Table 2: A simple propensity score model to predict ranking. As expected, academic quality is not statistically significantly predictive of ranking, whereas athletic quality ($p < 0.05$) and location near a major metropolitan city are ($p < 0.01$).

4 Propensity score model V2

	Ranked in 2017
Athletic quality	.41**
	(.16)
Near big market	.35***
	(.093)
Observations	100
R^2	0.171

Table 3: A simple(r) propensity score model to predict ranking. Here, I have dropped academic quality as it was not statistically significantly predictive of ranking. Athletic quality ($p < 0.05$) and location near a major metropolitan city ($p < 0.01$) remain.

5 Stacked histogram

See **Figure 1** at the bottom of this document.

6 Regression to estimate effect of treatment

	Alumni donations in 2018
Athletic quality	49***
	(5.1)
Academic quality	100***
	(.43)
Near big market	999***
	(4.1)
Ranked in 2017	500***
	(.25)
Constant	.56
	(.63)
Observations	93
R^2	1.000

Table 3: A regression model to estimate the effect of being ranked on alumni donations. The block fixed effects are included in this regression but are omitted from output for brevity. All failed to achieved statistical significance at the $p = 0.05$ level. The results of this regression indicate that, after controlling for athletic quality of the university, the academic quality of the university, and location near a major metropolitan city, being ranked in 2017 will increase alumni donations by approximately \$500,000 (on average). This result is highly statistically significant at the $p < 0.01$ level.

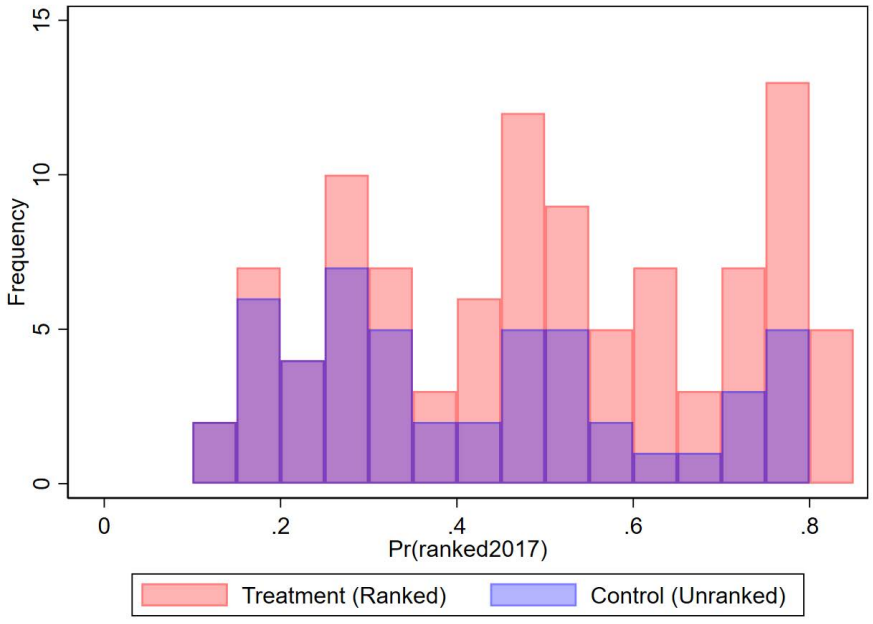

Figure 1: Stacked histogram of propensity scores for treatment vs. control.